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Peter C. Dibble

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EXAMINER

LEE, KWOK W

ART UNIT

PAPER NUMBER

2195

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DELIVERY MODE

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/802,386

Applicant(s)

DIBBLE ET AL.

Examiner

KWOK W. LEE

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Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 February 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-28 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-28 is/are rejected.
- 7) ☒ Claim(s) 1, 12, 14, 15, 17, 24, 25, 27 and 28 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 9/24/04, 8/23/06 and 2/8/07
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

1. Claims 1-28 are pending in this application.

Specification

2. The specification is objected to because the last sentence on page 4 going on to page 5 does not make grammatical sense and appears to be missing words or sentences.

Claim Objections

3. Claims 1 and 24-25 and 27-28 are objected to because of the following informalities:
 4. As per claim 1, line 4 and claim 24, lines 5-6; "a dispatch table" should be "the dispatch table" since an "a dispatch table" had already been state in line 1 of both claims.
 5. As per claims 25, 27 and 28, in the last line of these claims, the limitation "handing the state transition" were recited. This seems to be a spelling mistake as to the intended limitation should be "handling the state transition".

Appropriate correction is required.

Claim Rejections - 35 USC § 101

7. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

8. Claims 23-24, and 27-28 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

9. As per claims 23 and 27, they're rejected under 35 U.S.C. 101 because they claim software alone without it being stored in a storage media and computer hardware required for execution of the software. Software alone is directed to non-statutory subject matter.

10. As per claims 24 and 28, they're rejected under 35 U.S.C. 101 because the claimed invention are directed to system claims, but appearing to be comprised of software alone without claiming associated computer hardware required for execution. For example, claims 24 and 28 recited means for determining an execution context/state transition and means for responding to a change in the execution context/state transition, are all software modules/functions. Software alone is directed to a non-statutory subject matter.

Claim Rejections - 35 USC § 112

11. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

12. Claims 1-24 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

A. The following claim language is unclear and indefinite:

(i) As per claims 1, 23 and 24, it is uncertain as to what is contained in a dispatch table (i.e. code or addresses) and in what effect does the table have in relation to the change in execution context.

(ii) As per claim 15, the step of checking memory references is being described as further including, however, there was no mention of checking memory references in the preceding dependent/independent claims; therefore it is unclear as to what step this claim is referring to.

B. The following terms lack antecedent basis:

(i) the memory – claim 14, line 1.

(ii) the previous execution context – claim 17, line 2.

(iii) the stored dispatch table – claim 17, line 3.

Double Patenting

14. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory

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obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

15. Claims 1-3, and 20-24 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1, 9, 11 and 19 of U.S. Patent No. 7,296,257. Although the conflicting claims are not identical, they are not patentably distinct from each other because both set of claims deal with using a dispatch table to respond to a change caused by an event and in US 7,296,257, the only difference is handling an asynchronously interrupted exception (AIE).

It would have been obvious to one of ordinary skill in the art to have included AIE in this pending application because doing so would increase the field of use to include AIE area.

Claim Rejections - 35 USC § 102

16. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

17. Claims 1-8, 13, 16, and 18-28 are rejected under 35 U.S.C. 102(b) as being anticipated by Griesemer (US 6,021,273).

18. As per claim 1, Griesemer teaches the invention as claimed including a method of providing a dispatch table (Figure 6) that reflects an execution context of computer readable instructions, the method comprising:

determining an execution context for computer readable instructions (Column 2, lines 35-44); and

responding to a change in the execution context by using a dispatch table which reflects the change (Column 2, lines 44-50).

19. As per claim 2, Griesemer teaches the invention as claimed wherein the dispatch table includes one or more addresses, each address associated with a starting location for code associated with an instruction to be interpreted (Column 9, lines 18-27).

20. As per claim 3, Griesemer teaches the invention as claimed wherein using a dispatch table which reflects the change in execution context further includes rewriting one or more entries of the dispatch table so that the rewritten locations point to code capable of handling the change in execution context (Column 9, lines 43-51).

21. As per claim 4, Griesemer teaches the invention as claimed wherein using a dispatch table which reflects the change in execution context further includes selecting a predefined dispatch table having one or more addresses that point to code capable of handling the change in execution context (Column 9, lines 16-51).

22. As per claim 5, Griesemer teaches the invention as claimed wherein the predefined dispatch table is selected from a library of predefined dispatch tables, where each dispatch table in the library reflects a specific execution context (Column 9, lines 43-49).

23. As per claim 6, Griesemer teaches the invention as claimed wherein determining a change in execution context further includes checking one or more memory references (Column 10, lines 22-32).

24. As per claim 7, Griesemer teaches the invention as claimed wherein the execution context for the instructions corresponds to the execution context of a thread (or more generally, schedulable object) executing in a data processing system (Column 7, lines 3-7).

25. As per claim 8, Griesemer teaches the invention as claimed wherein the dispatch table reflecting the change in execution context is capable of managing one of the following execution states of the thread:

- unreachable state;

- state in which reference or assignment rules are not required (Column 8, lines 18-21);

- state in which all assignment rules are enforced;

- state in which only reference rules are enforced;

- state in which reference and assignment rules, except those that refer to a depth of a scope stack, are enforced; or

- state in which all reference and assignment rules are checked.

26. As per claim 13, Griesemer teaches the invention as claimed wherein determining the execution context further includes:

- checking one or more memory references; or

- checking one or more memory assignments (Column 10, lines 22-32).

27. As per claim 16, Griesemer teaches the invention as claimed further includes storing the previous execution context of the thread as reflected in the dispatch table before the change (See figure 5, 505).

28. As per claim 18, Griesemer teaches the invention as claimed wherein using a dispatch table reflecting the change in execution context causes the instructions to be interpreted using memory reference checking rules or memory assignment checking rules (Column 10, lines 22-32).

29. As per claim 19, Griesemer teaches the invention as claimed further including throwing an exception if there is a violation of any of the reference or assignment checking rules (Column 12, lines 11-17).

30. As per claim 20, Griesemer teaches the invention as claimed wherein the dispatch table is used to implement the instructions into machine executable code (Column 9, lines 30-38).

31. As per claim 21, Griesemer teaches the invention as claimed wherein a bytecode interpreter causes the dispatch table to reflect the change in execution context (Column 9, lines 30-38).

32. As per claim 22, Griesemer teaches the invention as claimed wherein the dispatch table is any one of: a bytecode vector table (Column 9, lines 30-38) or opcode vector table.

33. As per claim 23, Griesemer teaches the invention as claimed including a software system comprising:

a handler responsive to a change in execution context for computer readable instructions (Column 2, lines 44-50); and

an interpreter, coupled to the handler, which causes the instructions to be associated with a dispatch table that reflects the change in execution context (Column 2, lines 44-50).

34. As per claim 24, it is a system claim of claim 1; therefore, it is rejected for the same reason as claim 1.

35. As per claim 25, Griesemer teaches the invention as claimed including a method of managing state transitions of threads (Column 7, lines 3-7) executing in a data processing system, the method comprising:

determining a state transition of an active thread (Column 2, lines 35-44); and

responding to the state transition by coupling the thread to computer readable instructions being capable of handling the state transition (Column 2, lines 44-50).

36. As per claim 26, Griesemer teaches the invention as claimed wherein coupling the thread to computer readable instructions further includes patching address entries in a dispatch table (Column 9, lines 43-51).

37. As per claim 27, Griesemer teaches the invention as claimed including a software system for managing state transitions of threads (Column 7, lines 3-7) executing in a data processor, the system comprising:

an handler responsive to a state transition of an active thread (Column 2, lines 44-50); and

an interpreter, in communication with the even handler, which couples the thread to computer readable instructions being capable of handling the state transition (Column 2, lines 44-50).

38. As per claim 28, it is a system claim of claim 25; therefore, it is rejected for the same reason as claim 25.

39. Claims 1-5 and 20-24 are rejected under 35 U.S.C. 102(e) as being anticipated by Dibble et al (US 7,296,257).

41. As per claim 1, Dibble et al teaches the invention as claimed including a method of providing a dispatch table that reflects an execution context of computer readable instructions, the method comprising:

determining an execution context for computer readable instructions (Column 5, lines 40-50); and

responding to a change in the execution context by using a dispatch table which reflects the change (Column 5, lines 40-50).

42. As per claim 2, Dibble et al teaches the invention as claimed wherein the dispatch table includes one or more addresses, each address associated with a starting location for code associated with an instruction to be interpreted (Column 5, lines 43-45).

43. As per claim 3, Dibble et al teaches the invention as claimed wherein using a dispatch table which reflects the change in execution context further includes rewriting one or more entries of the dispatch table so that the rewritten locations point to code capable of handling the change in execution context (Column 5, lines 45-50).

44. As per claim 4, Dibble et al teaches the invention as claimed wherein using a dispatch table which reflects the change in execution context further includes selecting a predefined dispatch table having one or more addresses that point to code capable of handling the change in execution context (Column 6, lines 52-56).

45. As per claim 5, Dibble et al teaches the invention as claimed wherein the predefined dispatch table is selected from a library of predefined dispatch tables, where

each dispatch table in the library reflects a specific execution context (Column 6, lines 52-56).

46. As per claim 20, Dibble et al teaches the invention as claimed wherein the dispatch table is used to implement the instructions into machine executable code (Column 5, lines 43-45).

47. As per claim 21, Dibble et al teaches the invention as claimed wherein a bytecode interpreter causes the dispatch table to reflect the change in execution context (Column 6, lines 52-56).

48. As per claim 22, Dibble et al teaches the invention as claimed wherein the dispatch table is any one of: a bytecode vector table (Column 6, lines 57-60) or opcode vector table.

49. As per claim 23, Dibble et al teaches the invention as claimed including a software system comprising:

a handler responsive to a change in execution context for computer readable instructions (Column 5, lines 40-50); and

an interpreter, coupled to the handler, which causes the instructions to be associated with a dispatch table that reflects the change in execution context (Column 5, lines 40-50).

50. As per claim 24, it is a system claim of claim 1; therefore, it is rejected for the same reason as claim 1.

Claim Rejections - 35 USC § 103

. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

51. Claims 9-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Griesemer (US 6,021,273).

52. As per claim 9, Griesemer does not teach wherein determining the execution context further includes determining whether the thread is a real-time thread.

However, it was well-known that a real-time thread is the same as a non-real-time thread with the exception that the real-time thread executes at the highest priority. It would have been obvious at the time of the invention was made to a person having ordinary skill in the art to which said subject matter pertains to have Griesemer

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determine whether the thread was a real-time thread, during determining the execution context of a thread so that if it is a non-real-time thread, a real-time thread would be able to preempt it.

53. As per claim 10, Griesemer substantially teaches wherein if the thread is a real-time thread, the execution context of the thread is one of: real-time thread with no scope on a scope stack; real-time thread with at least one scope on a scope stack (Column 8, lines 15-32); no-heap real-time thread with no scope on a scope stack; or no-heap real-time thread with at least one scope on the stack.

54. As per claim 11, Griesemer substantially teaches wherein each execution context is associated with a corresponding dispatch table.

Claims allowable

6. Claims 12, 14-15 and 17 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten or amended to overcome the rejection under 35 USC 112 set forth in this office action and to include all of the limitations of the base claim and any intervening claims.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to KWOK W. LEE whose telephone number is (571)270-

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3557. The examiner can normally be reached on Mon - Thu and alternate Fridays 7:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Meng An can be reached on 571-272-3756. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/K. W. L./
Examiner, Art Unit 2195

/Meng-Ai An/
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